U.S. Department
of Transportation

**Pipeline and
Hazardous Materials
Safety Administration**

400 Seventh Street, S.W.
Washington, D.C. 20590

MAY 3 1 2005

DOT-E 10481
(FOURTH REVISION)

EXPIRATION DATE: April 30, 2007

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: M1 Engineering Limited
Bradford, West Yorkshire, England
(U.S. Agent: W.R. Zanes & Co. of LA., Inc.
New Orleans, LA)

2. PURPOSE AND LIMITATIONS:

a. This exemption authorizes the manufacture, mark, sale and use of a non-DOT specification vacuum insulated portable tank in an ISO frame conforming with all regulations applicable to a DOT Specification MC-338 cargo tank motor vehicle, except as specified herein, for the transportation in commerce of the materials authorized by this exemption. This exemption provides no relief from the Hazardous Materials Regulations (HMR) other than as specifically stated herein.

b. The safety analyses performed in development of this exemption only considered the hazards and risks associated with transportation in commerce.

3. REGULATORY SYSTEM AFFECTED: 49 CFR Parts 106, 107 and 171-180.

4. REGULATIONS FROM WHICH EXEMPTED: 49 CFR §§ 173.318 and 176.76(g) in that a non-DOT specification portable tank is not authorized, except as prescribed herein.

5. BASIS: This exemption is based on the application of W.R. Zanes & Co. of La., Inc., on behalf of M1 Engineering Limited dated March 29, 2005 submitted in accordance with § 107.109.

6. HAZARDOUS MATERIALS (49 CFR § 172.101):

Hazardous Material Description			
Proper Shipping Name	**Hazard Class/ Division**	**Identification Number**	**Packing Group**
Argon, refrigerated liquid *(cryogenic liquid)*	2.2	UN1951	N/A
Ethylene, refrigerated liquid *(cryogenic liquid)*	2.1	UN1038	N/A
Methane, refrigerated liquid (*cryogenics liquid*) *or* Natural gas, refrigerated liquid *(cryogenic liquid), with high methane content*	2.1	UN1972	N/A
Nitrogen, refrigerated liquid *cryogenic liquid*	2.2	UN1977	N/A
Oxygen, refrigerated liquid *(cryogenic liquid)*	2.2	UN1073	N/A

7. SAFETY CONTROL MEASURES:

a. PACKAGING -

(1) Prescribed packaging is a non-DOT specification portable tank designed, constructed and "U" stamped in accordance with Section VIII, Division 1 of the ASME Code. The portable tank is vacuum insulated and enclosed in an ISO frame. The portable tank must conform to M1 Engineering Limited's drawings No. C265065 dated September 20, 1990; B491041 dated July 7, 1990; B489455/E dated March 1990 or M1 Engineering Limited's drawing No. CCU/008-013/01 dated March 1, 2001; and other drawings, design calculations, and U1-A forms on file with the Office of Hazardous Materials Exemptions and Approvals (OHMEA). Two designs of portable tanks are authorized with design criteria as follows:

Tank Design	Design 1	Design 2
Design pressure	135 psig (9.31 bar)	164 psig (11.35 bar)
MAWP	116 psig (8 bar)	150 psig (10.3 bar)
Design temperature	-320 °F (-196°C)	-320 °F (-196°C)
Water capacity	5,019 U.S gallons (19000 liters)	5,284 U.S gallons (20000 liters)

(2) Additionally, each tank must conform to the requirements contained in § 178.338 except as follows:

§ 178.338-2 Material.

(a) Tank construction material is SA 240 Type 304 austenitic stainless steel for the inner tank; and BS 1501 Pt.3- 304 stainless steel or equivalent steel for the outer jacket. Material for structural attachments is SA 36 or equivalent specification steel.

* * *

§ 178.338-6 Manholes.

(a) * * *

(b) Each portable tank must be provided with an inspection access hole (manhole) of not less than 18 inches (456 mm) diameter. After a final inspection, the access hole must be closed by welding using a suitable access cover plate fabricated from the same material as the tank. The tank must be provided with a means of entrance and exit through the jacket, or the jacket must be marked to indicate the access hole location.

§ 178.338-10 Collision damage protection. This section does not apply.

§ 178.338-13 Supports and anchoring.

(a) * * *

(b), (c) The portable tank need not conform to § 178.338-13(b) or (c). The portable tank must meet the definition of "container" specified in 49 CFR 450.3(a) and must fully comply with the applicable provisions of 49 CFR parts 450-453, and each design must be qualified in accordance with § 178.270-13(c).

§ 178.338-18 Marking.

(a) * * *

(1) "DOT-E 10481" must replace the mark "DOT MC-338".

b. TESTING - Each tank must be reinspected and retested once every five years in accordance with the procedure prescribed in § 180.605(g) for DOT Specification 51 portable tanks. The test pressure for the inner tank must be determined by the following formulas:

If there is no vacuum in the outer jacket during the test:

$$P_T = 1.25 \times P_d$$

If vacuum exists in the outer jacket during test:

$$P_T = [1.25 \times P_d] - 14.7$$

Where:

P_T = Test pressure, psig

P_d = Design pressure (the sum of the maximum allowable working pressure, liquid head and 14.7 psi)

c. OPERATIONAL CONTROLS -

(1) Each portable tank must be prepared and shipped as required in § 173.318, as applicable for the lading.

(2) Shipments by cargo vessel must conform to the following:

(i) The package must conform to § 176.76(g). Portable tanks may be over stowed only if enclosed in ISO-type frames and otherwise suitably protected. Portable tanks must be stowed such that they are readily accessible and can be monitored in accordance with the provisions of this exemption.

(ii) The legend "One-Way Travel Time _____ Hours" or "OWTT _____ Hours" must be marked on the shipping paper and on the dangerous cargo manifest immediately after the container description. The OWTT is determined by the formula:

OWTT = MRHT - 24 hours.

(iii) A written record of the portable tank's pressure and ambient (outside) temperature at the following times must be prepared for each shipment.

(A) At the start of each trip;

(B) Immediately before and after any manual venting;

(C) At least every 24 hours; and

(D) At the destination point.

(iv) Any lading road relief valve set at a pressure lower than that prescribed for the (safety) pressure relief valve must be closed during transportation by cargo vessel unless the holding time was determined based on the setting of the pressure control valve.

(3) No person may transport or offer for transportation a charged portable tank unless the pressure of the lading is equal to or less than that used to determine the marked rated holding time MRHT and the OWTT is equal to or greater than the elapsed time between the start and termination of travel.

(4) The actual holding time for each tank must be determined after each shipment. If it is determined that the actual holding time is less than 90 percent of the MRHT of the tank, the tank may not be refilled until it is restored to its MRHT or the tank is re-marked with the reduced holding time determined by this examination.

(5) The holding time and the MRHT of the first portable tank must be determined and results thereof must be submitted to OHMEA prior to initial shipment.

8. SPECIAL PROVISIONS:

a. In accordance with the provisions of Paragraph (b) of § 173.22a, persons may use the packaging authorized by this exemption for the transportation of the hazardous materials specified in paragraph 6, only in conformance with the terms of this exemption.

b. A person who is not a holder of this exemption, but receives a package covered by this exemption, may reoffer it for transportation provided no modification or change is made to the package or its contents and it is offered for transportation in conformance with this exemption and the HMR.

c. A current copy of this exemption must be maintained at each facility where the package is offered or reoffered for transportation.

d. Each packaging manufactured under the authority of this exemption must be either (1) marked with the name of the manufacturer and location (city and state) of the facility at which it is manufactured or (2) marked with a registration symbol designated by the Office of Hazardous Materials Exemptions and Approvals for a specific manufacturing facility.

e. A current copy of this exemption must be maintained at each facility where the package is manufactured under the authority of this exemption. It must be made available to a DOT representative upon request.

f. Each portable tank must be plainly and durable marked on both sides near the middle, in letters and numbers at least two (2) inches high on a contrasting background, "DOT-E 10481".

g. Transportation of Division 2.1 materials (flammable gases) are not authorized aboard cargo vessel unless specially authorized in the Hazardous Materials Table (§ 172.101).

9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle, rail freight and cargo vessel.

10. MODAL REQUIREMENTS:

a. A current copy of this exemption must be carried aboard each cargo vessel and motor vehicle used to transport packages covered by this exemption.

b. The portable tank must be secured to the motor vehicle in accordance with the requirements of 49 CFR 393.100 through 393.106. Additionally, the motor vehicle's bumper must be located at least 6 inches to the rear of any tank component used for loading or unloading that may contain lading during transit.

c. Portable tanks may not be transported in container-on-flat car (COFC) or trailer-on-flat car (TOFC) service except under conditions approved by the Associate Administrator for Safety, Federal Railroad Administration.

11. COMPLIANCE: Failure by a person to comply with any of the following may result in suspension or revocation of this exemption and penalties prescribed by the Federal hazardous materials transportation law, 49 U.S.C. 5101 et seq:

- All terms and conditions prescribed in this exemption and the Hazardous Materials Regulations, Parts 171-180.
- Persons operating under the terms of this exemption must comply with the security plan requirement in Subpart I of Part 172 of the HMR, when applicable.
- Registration required by § 107.601 et seq., when applicable.

Each "Hazmat employee", as defined in § 171.8, who performs a function subject to this exemption must receive training on the requirements and conditions of this exemption in addition to the training required by §§ 172.700 through 172.704.

No person may use or apply this exemption, including display of its number, when the exemption has expired or is otherwise no longer in effect.

12. REPORTING REQUIREMENTS: Shipments or operations conducted under this exemption are subject to the Hazardous Materials Incident Reporting requirements specified in 49 CFR §§ 171.15 - Immediate notice of certain hazardous materials incidents, and 171.16 - Detailed hazardous materials incident reports. In addition, the grantee(s) of this exemption must notify the Associate Administrator for Hazardous Materials Safety -- OHMEA, in writing, of any incident involving a package, shipment or operation conducted under terms of this exemption.

Issued in Washington, D.C.:

MAY 3 1 2005
(DATE)

Robert A. McGuire
Associate Administrator for
Hazardous Materials Safety

Address all inquiries to: Associate Administrator for Hazardous Materials Safety, Pipeline and Hazardous Materials Safety Administration, Department of Transportation, Washington, D.C. 20590. Attention: PHH-31.

Copies of this exemption may be obtained by accessing the Hazardous Materials Safety Homepage at http://hazmat.dot.gov/exemptions Photo reproductions and legible reductions of this exemption are permitted. Any alteration of this exemption is prohibited.

PO: PTOlson/alb